

Butterfly checklists for five National Parks in eastern Australia: compiled unpublished reports sent to state conservation services during the 1990s

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Abstract: Five National Park reports, submitted to the state and regional services during the 1990s, have been sequentially compiled in this report. The surveyed parks involve (1) Jourama Falls, (2) Mt Elliot, (3) Iron Range, (4) Eungella, all in northern Queensland, and (5) Mt Warning, in northern New South Wales. Each presents a list of butterfly species, details the number of visits involved and sources of data, and each is followed by one or more annotations documenting any changes in knowledge applicable since their release dates last decade. A new northern distribution record for *Telicota dolon* (Hesperiinae) is provided, and passing attention is drawn to a literature record of *Hypocystia metirius* (Satyrinae) from Iron Range, normally a common species in its habitat, but one that has not been substantiated by others who have observed butterflies in that area.

Introduction

The following paper incorporates lists of butterfly species collected or observed in five National Parks in New South Wales and northern Queensland. These lists were submitted as formal reports to the appropriate services and local offices, and are more or less presented as originally submitted. Minor grammatical changes have been made, as well as insertion or deletions of minor factual details as appropriate to a wider audience. Each is dated as per the covering letters provided with the reports (not included). The Barlowian botanical zones referred to, and their butterfly listings, can be sourced in Dunn and Dunn (1991). Because this paper is a sequential compilation of several unpublished reports, references pertaining to each report remain with the relevant sections to maintain their original separateness. A final set of references appears at the end for citations in this introductory section and for the addenda and corrigenda attached to each report due to changes in knowledge since their submissions.

Low submission documents

The definition of 'publication' varies and these survey reports are technically 'unpublished' as they are very low circulation documents and not generally available outside the governing bodies which received them. Nonetheless, they remain valid for citation in scientific periodicals and are occasionally utilised (eg. Newland, 1999). Formal release avoids the possibility of loss of the original documents, and reduces the chances of duplication of effort by others, who instead can add to these.

Identification and collection

Material was collected during the early 1990s under permit (QNPWS: 1293 & 1385; NSW NPWS: A1196) and set and labelled according to standard practices (Common & Waterhouse, 1981) with inclusion of general habitat data (later emphasised by Braby, 2000). The vast majority of specimens have been deposited with the Australian National Insect Collection (ANIC, CSIRO) in Canberra. Selected others were lodged with the Victorian Agricultural Insect Collection (Melbourne), the Queensland Museum (Brisbane), and the South Australian Museum (Adelaide). In addition a few specimens are still privately held in the author's reference collection.

Only a small number of specimens were collected for permanent reference. With field experience, most large species can be identified without the need to interfere with them. Careful stalking permits adult butterflies to be approached at close range in their habitats, where under ideal conditions, their wing patterns can be seen clearly to eliminate other similar species anticipated in the area. Alternatively, when captured and identified they can be released undamaged, where no doubt exists or is unlikely to in the future. Nonetheless, some particularly common and variable groups such as *Elodina* and *Eurema*, for examples, were regularly captured and preserved. This was wise in hindsight because several new taxa in these groups have been recognised or named from the mainland in subsequent years (De Baar & Hancock, 1993; Braby, 1997, 2000), and material has needed re-examination in light of these. In many National Parks in eastern Australia, especially those with extensive woodland, close observation is usually possible, permitting a preliminary short list of conspicuous species to be compiled by walking park trails. The fauna of Mt Warning, NSW, however, is comparatively inaccessible because of the tall palm forest, closed tree canopy, and very steep terrain that usually prevents close approach to the smaller low flying species perched amongst dense vegetation. Here, as in other vine forest areas, a long handled hoop net is an essential tool for data collection, and by sweeping adults, avoids undue trampling of vegetation creating potential for erosion in areas where rainfall can be heavy and prolonged. Even descending along stony creeks requires caution and dexterity because of uneven ground or slippery footing, and makes approach of adults and their collection arduous. Moreover in this reserve, many species perch high up in the mid-canopy, frequently out of reach of a net.

Nomenclature

Any changes to earlier identifications are indicated in annotations at the end of each locality report. The lists remain in the layouts in which they were submitted, and retain the period nomenclature and sequence based on Dunn & Dunn (1991). Many species' epithet spellings, familiar to users of Common and Waterhouse (1981) have changed following the sensible trend to adopt the original publication spellings. This process, in the longer term, encourages greater stability and recognition over generations, and relieves reliance on complicated Latin gender modifications, because most younger entomologists and scientists, unlike my generation, no longer study Latin in secondary school for two or more years as I did. The contemporary spellings (and their authorities) can be sourced in Braby (2000), and I encourage their continued use (Dunn 2004).

Park reports

Five National Park reports follow. These involve (1) Jourama Falls, (2) Mt Elliot, (3) Iron Range, (4) Eungella in northern Queensland, and (5) Mt Warning, NSW. Each lists the species encountered, the number of visits, and includes annotations of any changes applicable.

Report 1

The following report, dated 29 April 1992, was submitted to the Director of QNPWS, and copies sent to staff of the relevant regional office then managing Reserve Number 584 in the Parish of Waterview, Queensland.

BUTTERFLIES OF JOURAMA FALLS NATIONAL PARK NORTHERN QUEENSLAND

Jourama Falls National Park is located about 40 km south of Ingham, and is in the southern section of the Cape York phytogeographic region. It may be slightly atypical of the Cape York botanical region, possibly sharing some aspects of the Burdekin botanical region to the south of Paluma and/or possessing a fauna of a major transitional component.

Survey work was undertaken during February (1991), March (1990), October (1991) and November (1991). During March only preliminary observations were carried out. Sampling was undertaken along the Waterview Creek near the park entrance, at the falls, and in the open forest above the falls area. The sampled habitat was lowland gallery rainforest surrounded by open forest. A total of 60 species were recorded, but sampling during other months would probably reveal a further 40 species or more. There are no published lists available for this park.

List of species of butterfly recorded:

(R) Observed to be rare in the park

(A) Very abundant/dominating species in park

All unmarked species are reasonably common in the park, but the status of marked and unmarked species remains relative to the seasonal conditions prevailing at the time of sampling.

- Badamia exclamationis*
Tagiades japetus
(R) *Trapezites heteromacula*
(R) *T. maheta*
Toxidia thyrrhus
(R) *Neohesperilla crocea*
(A) *Suniana sunias*
Arrhenes dschilus
Telicota augias
Graphium sarpedon
G. eurypylus
G. agamemnon
Papilio aegeus
(A) *P. fuscus*
(R) *P. ambrax*
P. ulysses
(A) *Cressida cressida*
Catopsilia pomona
Eurema brigitta
E. hecabe
(R) *E. smilax*
(A) *E. laeta*
Delias mysis
Anaphaeis java
Cepora perimale
Appias paulina
Danaus chrysippus
D. affinis
Tirumala hamata
(A) *Euploea core*
E. tulliolus
Melanitis leda
Mycalesis terminus
M. perseus
Hypocysta adiante
Ypthima actous
Phaedyma shepherdii
Pantoporia consimilis
Doleschallia bisaltide
(A) *Hypolimnias bolina*
H. alimena
Junonia villida
J. orithya
Cupha prosope
Arhopala centaurus
(R) *A. madytus*

- (A) *A. micale*
Hypolycaena phorbis
Anthene seltuttus
Candalides helenita
C. erinus
Nacaduba berenice
Prosotas nora
Theclinesstes onycha
Danis hymetus
D. cyanea
Jamides phaseli
- (A) *Catochrysops panormus*
Famegana alsulus
Euchrysops cnejus

Total of 60 species

Addendum and corrigendum (2006): Jourama Falls NP

One male *Eurema* taken in February 1991, whilst seeking mud soaks, has since been identified as *E. alitha*; the remaining specimens taken belong to *E. hecabe*. In addition, subsequent personal observations in January 2001 revealed the presence of *Ocybadistes ardea*, *Papilio demoleus*, *Zizina labradus* and *Lampides boeticus* in the park. The reserve's tally has risen to 65spp.

Report 2

The following report, dated 29 April 1992, was submitted to the Director of QNPWS and copies sent to staff of the relevant regional office then managing Bowling Green Bay, Reserve Number 767 in the Parish of Abbotsford, Queensland.

BUTTERFLIES OF MOUNT ELLIOT NATIONAL PARK (WITHIN BOWLING GREEN NATIONAL PARK)

The Mount Elliot National Park is located south of Townsville in the northern coastal sector of the Burdekin phytogeographic region. This region is less rich in species of butterfly than the Cape York region to the north of Paluma. The Burdekin and Cape York regions are known to possess a total 218 and 285 species of butterfly respectively (Dunn & Dunn, 1991). In the Burdekin region the greatest representation of species occurs during February and April, with the poorest in June (Dunn & Dunn, 1991).

Extensive sampling was carried out during February (1991), March (1990), October (1991), November (1991) in lowland areas from the park entrance, along Alligator Creek and its tributaries, to the falls area. In addition, some limited observations in upland areas above the falls during October 1991 were voluntarily undertaken by Michael Braby (James Cook University, Townsville) to supplement this study, as I did not extend my sampling to these upland areas as initially planned. Braby's observations near the plateau revealed a further eight species not recorded lower down and strongly suggests many more species are likely to be recorded from this area. Seventy-one (71) species were recorded from the park, but I estimate based on my extensive survey work in other areas of the Burdekin region, that a total of at least 150 species could be expected if sampling, that included upland areas, were undertaken in other months. There are no published lists available for this park.

List of species of butterfly recorded:

Those marked (") are from above the falls area; three of these were mentioned in a communication by Braby (1992). The record marked (#) was based on preserved material labelled 'Mt Elliot' but its exact place of capture is not known. The species is common around Townsville and inhabits woodlands typical of lowland areas in the park. It was probably not taken within the park boundaries, but the presence of the species in the park is almost a certainty.

(R) Observed to be rare

(A) Very abundant/dominating species

All unmarked species can be assumed to be common in the park, but abundance of all species remains dependent on prevailing seasonal conditions.

- (A) *Badamia exclamationis*
- Toxidia thyrrhus*
- (R) *Neohesperilla crocea*
- (R) *Taractrocera dolon*
- T. ina*
- (A) *Suniana sunias*
- Telicota colon*
- T. ancilla*
- (R) *T. brachydesma*
- Cephrenes trichopepla*
- Pelopidas agna*
- Graphium macleayanum* (")
- G. sarpedon*
- G. eurypylus*
- G. agamemnon*
- Papilio aegeus*
- P. fuscus*
- (A) *Cressida cressida*
- (R) *Troides priamus*
- Catopsilia pomona*
- Eurema brigitta*
- E. hecabe*
- (A) *E. laeta*
- E. herla*
- (R) *Elodina angulipennis*
- (R) *E. perdita*
- Delias argenthona*
- (A) *D. nigrina* (")
- (R) *D. ennia* (")
- (R) *D. nysa* (")
- Anaphaeis java*
- Cepora perimale*
- Appias paulina*
- Danaus chrysippus*
- D. affinis*
- Tirumala hamata*
- (A) *Euploea core*
- E. tulliolus*
- Tellervo zoilus* (")
- Melanitis leda*

- Mycalesis terminus*
M. perseus
Hypocysta irius
H. adiante
Ypthima actous
Phaedyma shepherdii
Pantoporia consimilis
Doleschallia bisaltide
Vindula arsinoe
(R) *Mynes geoffroyi* (")
Hypolimnas bolina
H. alimena
Vanessa kershawi (")
Junonia villida
J. orithya
Cupha prosope
Arhopala centaurus
(R) *A. madytus*
Ogyris zosine (#)
Hypolycaena phorbis
Anthene seltuttus
Candalides helenita (")
C. absimilis
C. erinus
Nacaduba berenice
Danis hymetus
Catochrysops panormus
(R) *Zizeeria karsandra*
Zizina labradus
Famegana alsulus
Euchrysops cnejus

Total of 71 species

Report 2 references

Braby, M.F. 1992. Range extensions and distribution records for some butterflies in north-eastern Queensland - part II. *Victorian Entomologist* 22: 51-55.

Dunn, K.L. & Dunn, L.E. 1991. *Review of Australian Butterflies: distribution, life history and taxonomy*. (Parts 1-4). Melbourne: Privately Published by the authors.

Addendum and corrigendum (2006): Mt Elliot NP

The specimens of *Ogyris zosine* mentioned in this report were traced to 'Mt Elliot' near Boonah in SE Queensland, nonetheless the species occurs commonly in the environs of Mt Elliot NP, namely in areas around Townsville, Giru and Woodstock (Dunn & Dunn database) but remains unknown from the park itself.

The record of *Telicota brachydesma* is erroneous (Dunn *et al.*, 1994; Braby, 2000). The male specimen has since been determined by KLD as *T. mesoptis*. This substitution does not modify the tally, however there were two species accidentally omitted: *Telicota augias* was collected in Feb. 1991, and Braby recorded *Theclinessthes miskini* in Oct. 1991 (Dunn & Dunn database).

Elodina angulipennis has a more restricted distribution now than then believed (De Baar & Hancock, 1993; Braby, 2000). Some populations formerly confused with that species have been named *E. queenslandica*; one female collected in vine thicket along a stony creek close to the ranger's residence in Feb. 1991 was designated a paratype of *E. queenslandica kuranda* (De Baar & Hancock, 1993). The specimen is now in the ANIC. In addition, Braby (2000) later illustrated one of two females of the 'wet season form' of *Elodina perditia* collected in vine thicket near the ranger's residence in Feb. 1991. The species was uncommon and localised in this area. The illustrated specimen is now in the ANIC.

Subsequent observations by KLD along Alligator Creek and close to the camping ground in December 1997, January 2001 and January 2002 revealed eight more species: namely *Hasora chromus*, *Papilio ulysses*, *Catopsilia pyranthe*, *Eurema smilax*, *Danaus plexippus*, *Arhopala micale*, *Phyliris innotatus*, and *Everes lacturnus*. The park tally has been increased to 80 spp.

Report 3

The following report, dated 29 April 1992, was submitted to the Director of QNPWS and copies were sent to staff of the relevant regional office then managing Reserve Number 008 in the Parish of Lloyd, Queensland.

BUTTERFLIES OF IRON RANGE NATIONAL PARK, CLAUDIE RIVER, QUEENSLAND

Iron Range National Park is located in the Claudie River basin, near the Lockhart River settlement, on eastern Cape York Peninsula in the northern sector of the Cape York phytogeographic region. This northern park is far richer in species than is, for example, the Jourama Falls reserve in the southern sections of the Cape York botanical region. The Cape York region is the richest in butterfly species in Australia, with greatest adult representation of species during April and May, and with the poorest in August (Dunn & Dunn, 1991).

Extensive sampling was undertaken throughout the park from near Mt Tozer in the west, at Mount Lamond and Philip Hill, and along the Claudie River and its tributaries, east to Scrubby Creek mining area. The predominant vegetation was sub-equatorial closed forest, gallery forest, and areas of riparian scrubs in woodland. Sampling was carried out in 1991 during October and November, but because that season was rather poor only 74 species were recorded, way below maximum expectations for these months based on the data presented by Dunn and Dunn (1991). However, the species list below is reasonably comprehensive as much preserved material is available from this region in various museums. A list of 181 species is provided based on holdings in the Dunn and Dunn database, and I estimate that the fauna will probably exceed 200 species pending further survey work in more varied habitats.

No assessment of abundance is provided as many records are from museum material and publications. Many publications mention individual species as occurring at Iron Range, and a few early lists are available for this area dating back to Waterhouse and Lyell (1914), but none is as complete as this current listing. Apart from collectors' personal reports, the most recent published compilation was the 1972 summary by Dr Geoff Monteith (Queensland Museum, Brisbane) who listed 140 species. This present list adds a further 41 species not listed by Monteith (1972). Of those reserves surveyed, Iron Range National Park has the highest species richness, containing nearly half of mainland Australia's butterfly species, assuming each breeds within current park boundaries.

NB: The record of '*Theclinesthes onycha*' given by Monteith (1972) in his list for Iron Range is outdated (Sibatani & Grund, 1978); the species intended is *T. miskini*.

List of species of butterfly recorded:

Those marked * were not encountered by me, but are known to occur in the park from other sources.

- * *Allora doleschallia*
- * *A. major*
- * *H. discolor*
- Badamia exclamationis*
- * *Chaetocneme critomedia*
- Netrocoryne repanda*
- Tagiades japetus*
- * *Rachelia extrusa*
- * *Trapezites heteromacula*
- * *T. iacchus*
- * *Toxidia thyrrhus*
- T. inornata*
- * *Neohesperilla crocea*
- * *Hesperilla ornata*
- * *Proeidosia polysema*
- Notocrypta waigensis*
- * *Taractrocera dolon*
- * *Ocybadistes walkeri*
- * *O. flavovittatus*
- * *O. ardea*
- Suniana sunias*
- * *S. lascivia*
- * *Arrhenes dschilus*
- * *A. marnas*
- * *Telicota eurotas*
- * *T. colon*
- T. augias*
- * *T. ohara*
- * *T. ancilla*
- T. mesoptis*
- * *T. brachydesma*
- * *Cephrenes trichopepla*
- * *C. augiades*
- Sabera caesina*
- * *S. dobboe*
- * *Mimene atropatene*
- * *Borbo cinnara*
- * *Pelopidas agna*
- P. lyelli*
- * *Protographium leosthenes*
- Graphium sarpedon*
- G. eurypylus*
- * *G. macfarlanei*
- * *G. agamemnon*
- G. aristeus*
- Papilio aegeus*
- P. fuscus*
- P. ulysses*

Cressida cressida
Atopaneura polydorus
Troides priamus
Catopsilia pomona
* *C. gorgophone*
* *Eurema brigitta*
* *E. candida*
E. hecabe
E. laeta
* *E. smilax*
* *E. herla*
* *Elodina parthia*
E. angulipennis
* *E. perdita*
Delias argenthona
D. mysis
D. ennia
D. aruna
* *D. nigrina*
* *D. nysa*
Cepora perimale
Appias paulina
A. ada
* *Danaus plexippus*
* *D. chrysippus*
D. affinis
Tirumala hamata
Euploea alcathoe
E. core
E. sylvester
* *E. tulliolus*
* *E. darchia*
Tellervo zoilus
Melanitis leda
Elymnias agondas
* *Mycalesis sirius*
M. terminus
M. perseus
Hypocysta irius
* *H. metirius*
* *H. adiante*
H. angustata
Ypthima actous
Polyura sempronius
Charaxes latona
* *Apaturina erminea*
Phaedyra shepherdii
Neptis praslini
Pantoporia venilia
P. consimilis
Mynes geoffroyi
Doleschallia bisaltide
Hypolimnas bolina

- * *H. misippus*
- H. alimena*
- * *H. anomala*
- Yoma sabina*
- Junonia hedonia*
- J. villida*
- J. orithya*
- Cethosia cydippe*
- * *Vindula arsinoe*
- * *Vagrans egista*
- Cupha prosope*
- * *Acraea andromacha*
- Pseudodipsas eone*
- Hypochrysops theon*
- H. hippuris*
- * *H. cleon*
- H. apelles*
- * *H. apollo*
- * *H. elgneri*
- * *H. polycletus*
- * *H. narcissus*
- * *Philiris diana*
- * *Ph. nitens*
- * *Ph. fulgens*
- * *Ph. ziska*
- * *Ph. innotata*
- * *Ph. azula*
- Arhopala wildei*
- * *A. centaurus*
- * *A. madytus*
- A. micale*
- * *Ogyris zosine*
- * *O. aenone*
- * *Jalmenus eichhorni*
- * *Hypolycaena phorbas*
- * *H. danis*
- * *Deudorix epijarbas*
- * *D. epirus*
- * *Virachola democles*
- * *Rapala varuna*
- * *Bindahara phocides*
- Anthene seltuttus*
- * *A. lycaenoides*
- * *Candalides margarita*
- C. helenita*
- C. absimilis*
- * *C. consimilis*
- * *C. erinus*
- C. geminus*
- * *Petrelaea dana*
- * *Nacaduba berenice*
- N. kurava*
- * *N. biocellata*

- * *Prosotas dubiosa*
- * *P. nora*
- * *Ionolyce helicon*
- * *Catopyrops florinda*
- Erysichton lineata*
- * *E. palmyra*
- Theclinesstes miskini*
- * *T. sulphitius*
- * *T. scintilata*
- * *Danis danis*
- * *D. hymetus*
- * *D. cyanea*
- * *Jamides aleuas*
- J. cytus*
- * *J. phaseli*
- Catochrysops panormus*
- * *C. amasea*
- * *Lampides boeticus*
- * *Zizina labradus*
- * *Famegana alsulus*
- * *Zizula hylax*
- * *Everes lacturnus*
- * *Pithecops dionysius*
- * *Megisba strongyle*
- * *Euchrysops cnejus*
- * *Freyeria trochylus*
- * *Praetaxila segecia*

Total of 181 species

Report 3 references

- Dunn, K.L. & Dunn, L.E. 1991. *Review of Australian Butterflies: distribution, life history and taxonomy*. (Parts 1-4). Melbourne: Privately Published by the authors.
- Monteith, G.B. 1972. A list of butterfly records from the Iron Range area of Cape York Peninsula. *News Bull. Ent. Soc. Qd.* 85: 9-14.
- Sibatani, A. & Grund, R.B. 1978. A revision of the *Theclinesstes onycha* complex (Lepidoptera: Lycaenidae). *Tyo To Ga (Trans. Lep. Soc. Jap.)* 29(1): 1-34.
- Waterhouse, G.A. & Lyell, G. 1914. *The Butterflies of Australia*. Sydney: Angus & Robertson, 239pp.

Addendum and corrigendum (2006): Iron Range NP

The record of *Taractrocera dolon* from the park was based on a specimen in the Museum of Victoria with missing antennae, and is erroneous – it is not that species (Braby, 2000). Nonetheless, I believe further survey work during the wet season will most likely confirm the species' presence within or close to the park boundaries. In fact, following determined searching in suitable areas on the Peninsula, I eventually collected a male *T. dolon* in woodland at '6km SW of the Wenlock Homestead, on the Iron Range Road, Qld' on 7 Jan. 2002 (KLDC). This new locality provides reliable evidence of the species presence on Cape York Peninsula far beyond the Hann River crossing, the northern limit accepted by Braby (2000). The enlarged species' distribution brings it within about 50km of the Iron Range reserve's western perimeter.

Allora doleschallii was listed in error; the 'Claudie River' specimens in the AM of which I had heard in 1992, but had not personally examined, are all *A. major* (Moulds pers. comm. 2006). Braby (2000) recently included the Iron Range district in his range-fill map, no doubt based on the record by Johnson and Doherty (1991) at the nearby locality of Packers Creek near Portland Roads. The species remains unknown from within current park boundaries, where much sampling has traditionally focussed on the primary closed forest areas along the Claudie River valley. Instead, depauperate rainforest areas where the host vine *Rhyssopteris* grows should be examined to confirm the species' likely presence in the park.

Le Souef (1971) contributed the unique record of *H. metirius*, and all listings by others (Common & Waterhouse, 1981; Dunn & Dunn, 1991, Braby 2000) are either openly cited or tacitly derived from this source. Although its presence is not unreasonable, there is no supporting specimen in the Le Souef collection (ANIC). Of particular importance, Daniels (1975) sampled in the region over a four-month period but did not find evidence of it. Valentine and Johnson (1992) undertook a sequential survey during the late dry season, soon after my departure in early November 1991, and likewise did not substantiate its presence at Iron Range. Although the record is considered authentic (Braby, 2000), without a specimen and given that Le Souef had contributed a number of unusual records which have since been considered unreliable or erroneous (Dunn, 1985; Dunn & Dunn, 1991; Ring & Olive, 1997; Braby, 2000; Johnson & Valentine, 2004) it also deserves independent verification.

Concerning the late Le Souef's conscientiousness, the late WNB Quick wrote anecdotally (in litt. 2/10/1985; photocopied letter archived in ANIC, CSIRO), "Zooie was one of my oldest entomological associates and friends, and I was very close to him and Mary. In spite of this closeness, or perhaps because of it, I have seen Zoo knock a setting board over so many times, and seen the scattered, unpinned labels replaced, apparently at random, so many times that I have to accept many [of his records] at the 'requires verification' level...although I wouldn't dare risk upsetting Mary by saying so, although I'm sure she's not unaware of the possibility of errors." Where authors or data contributors have an established history of vague labelling or inaccuracy one should edge on the side of caution, entertaining other possibilities where confirmation has not been forthcoming.

Three additional species have since been recorded from Iron Range, namely *Elodina claudia* (De Baar & Hancock, 1993), *Eurema alitha* (Braby, 1997) and *Appias celestrina* (Weir *et al.*, 2005). Australian *Eurema* 'candida' is now referred to *E. puella*. *Elodina perdita* has a far more restricted distribution than recognised at the time of this report; the specimens listed as that taxon belong to *Elodina walkeri*. Similarly, *Elodina angulipennis* has a more restricted distribution now than formerly believed (De Baar & Hancock, 1993). Those collected have since been re-examined and identified as *E. queenslandica*. In addition, all Australian populations of *Petrelaea* 'dana' are now referred to *P. tombugensis*, similarly *Danis* 'hymetus' is referred to *Psychonotus caelius* and *Freyeria* 'trochylus' to *F. putli* (Braby, 2000). Subsequent to these species additions and deletions the park tally now stands at 182 species.

During the wet season, in April trip tallies in this locality have been as high as 120 spp (Valentine & Johnson 1992). In contrast, low adult abundance and lower species richness were apparent during the dry season of 1991 when my survey was undertaken, a finding confirmed by Valentine and Johnson (1992) during their consecutive visit. Graham Wood, a local expert who was camping with me, had remarked on the paucity of species (Anon., 1991), and in particular, the absence of *E. puella* at sites where it was usually present on his previous visits. Valentine and Johnson (1992) recorded 37 species later that same month (November 1991), and did not add any species not already recorded in this report to Queensland NPWS. They overviewed collecting effort in the park and environs since the 1960s, but overlooked a report by McEvey (1977) who recorded 61 species during December 1973-January 1974 over an eight-day visit. Incidentally,

Valentine and Johnson (1992) reported 75 species on my trip, but this figure includes an additional species I encountered near Lockhart River (well outside the park boundary) and was excluded for the purposes of the park report provided herein, hence there is no discrepancy here. Finally, the 'Claudie River' and 'Iron Range' label data of many museum records rarely give further precision, so it is difficult to say whether so labelled records of others included in my list were from within current park boundaries or not. This might explain why Monteith (1972) selected the rather general wording, 'Iron Range area'.

Report 4

The following report was eventually dispatched to the ranger at the regional office via Dalrymple Heights, Queensland, with covering letter dated 11 July 1996 (after being misplaced for some period). The covering letter, part of which is reproduced below, stated the report was written in 1994, and probably before March, given that several Eungella NP observations recorded in March 1994, and soon after supplied by MFB for inclusion, were never appended. The original report to NPWS also included comparative lists for Crediton State Forest and Sydney Heads (30km SSE of Eungella). These two lists have been removed, not being a part of the National Park. Also of minor passing interest, a situational 'holiday snap' of the three of us (MFB, KLD, PJF) in Eungella NP appeared in the Victorian Entomologist 24(2): 48 (1994).

BUTTERFLIES OF EUNGELLA NATIONAL PARK, NORTHERN QUEENSLAND

Preamble (extract from covering letter)

The butterfly list below was compiled from records by Dr Michael Braby (MFB) (CSIRO Division of Entomology, Canberra), Peter Fox (PJF) (of Rockhampton) and myself (KLD) (Research Assistant in butterfly conservation, Environmental Sciences, Griffith University, Brisbane) during our September 1993 camping holiday in central Queensland. Most records are not specimen backed; a small number was preserved for taxonomic study [the majority has since been deposited in the ANIC]. Such a brief visit cannot achieve a near complete listing, as such, and a thorough survey ought to be carried out over several seasons and, perhaps, years. However, for the present the list serves as a guide to the more common species in the park.

Introduction

Eungella National Park is located west of Mackay, in the Burdekin phytogeographic region (Barlow System). Voluntary survey work by us was confined to the Broken River and Wishing Pool areas, and in Finch Hatton Gorge. Sampling was restricted to September 1993, and comprised only upland and lowland rainforest edges. Sampling in other months and inclusion of woodland habitats would probably triple the number of species presently recorded. The record marked (*) is from Boulder Creek; the adult was photographed by the park ranger, S. Pearson, and forwarded to us for identification and inclusion. This list also includes observations by MFB in September 1990, marked (B1). In all, 36 species are recorded from the rainforest section of the park.

List of species of butterfly recorded:

Status Key:

(R) Observed to be rare in the park

(A) Very abundant/dominating species in park

All unmarked species are reasonably common in the park, but the status of all marked and unmarked species is relative to the seasonal conditions prevailing at the time of sampling.

Habitat Key:

- u - upland rainforest (5km SSW of Broken River & Wishing Pool area)
- l - lowland rainforest (Finch Hatton Gorge)

NB: With limited sampling, only common and dominant species are likely to be encountered. Further sampling is essential to establish the rarer elements of the fauna.

Species list (Eungella National Park)

<i>Tagiades japedus</i> *	(l)
<i>Trapezites symmokus</i>	(u)
<i>Hesperilla ornata</i>	(u)
<i>Toxidia peron</i>	(u-roadside)
<i>Telicota ancilla</i>	(u)
<i>Suniana sunias</i>	(u, l)
<i>Ocybadistes flavovittatus</i>	(l)
<i>Protographium leosthenes</i>	(u, l) (A)
<i>Graphium macleayanum</i>	(u) (A)
<i>G. sarpedon</i>	(u)
<i>G. eurypylus</i>	(u, l)
<i>Papilio aegeus</i>	(u, l)
<i>P. ulysses</i>	(l)
<i>Cressida cressida</i>	(u)
<i>Catopsilia pomona</i>	(u)
<i>Eurema hecabe</i>	(u, l)
<i>Delias mysis</i>	(u)
<i>D. nigrina</i>	(u)
<i>Danaus plexippus</i>	(u)
<i>Tirumala hamata</i>	(u)
<i>Melanitis leda</i>	(u, l-B1)
<i>Hypocysta metirius</i>	(u, l-B1)
<i>H. irius</i>	(u, l - both B1)
<i>Mycalesis terminus</i>	(u, l-B1)
<i>M. perseus</i>	(l-B1)
<i>Cupha prosope</i>	(u, l) (A in l)
<i>Phaedyra shepherdii</i>	(u)
<i>Polyura sempronius</i>	(u)
<i>Vanessa kershawi</i>	(u)
<i>Acraea andromacha</i>	(u)
<i>Candalides absimilis</i>	(u) (A)
<i>Jamides phaseli</i>	(u)
<i>Danis hymetus</i>	(u)
<i>Zizina labradus</i>	(u)
<i>Zizeeria karsandra</i>	(u)
<i>Lampides boeticus</i>	(ul)
<i>Everes lacturnus</i>	(u)

Total of 36 species

Addendum (2006): Eungella NP

The following 15 additional species are known from Eungella National Park area based on museum and private records held in the Dunn and Dunn database. *Hasora discolor* ('Eungella'),

H. hurama ('Broken R'), *Badamia exclamationis* ('Eungella'), *Hesperilla sexguttata* ('4MSW Eungella Dam'), *Cephrenes augiades* ('Broken R'), *Delias nysa* ('Eungella' & 'Eungella Range'), *D. argenthona* ('Eungella'), *Hypolimnna misippus* ('Eungella Dam'), *Mynes geoffroyi* ('Broken R'), *Euploea tulliolus* ('Broken R'), *Philiris innotatus* ('Broken R'), *Jalmenus evagoras* ('Eungella'), *Ionolyce helicon* ('Broken R'), and *Catopyrops florinda* ('Eungella'). In addition, Sands (1986) listed *Hypochrysops ignitus* from 'Eungella'. Inclusive, this brings the park tally to about 51 species, assuming all were found within the currently defined boundaries. The two records from 'Eungella Dam' area are likely exceptions to this, but still in the vicinity nonetheless.

Report 5

The following report, dated 7 Feb.1995, was submitted to the Head Office of The NPWS NSW at Hurstville NSW and the relevant regional office then managing this reserve near Murwillumbah, NSW.

BUTTERFLIES OF MOUNT WARNING NATIONAL PARK, NEW SOUTH WALES

Mount Warning National Park is situated near Uki, south-west of Murwillumbah, and is in the central coastal section of the McPherson botanical Region (see Dunn & Dunn 1991).

A number of surveys were undertaken between 1992 and 1994 (viz. Sep. 1993, Sep. 1994, Oct. 1994, Nov. 1994, Dec. 1992, Jan. 1994, Mar. 1994, Apr. 1993, May 1994, Jul. 1993). No opportunity for survey work was available during February, June or August of those years. In the McPherson region peak adult butterfly activity is from September to April, but many species are still present, albeit in reduced numbers, throughout the year (Dunn & Dunn, 1991). Most of the survey work was conducted during the optimum seasonal period.

Lowland sampling was carried out along Breakfast Creek, commencing from the car park entrance down stream for about two kilometres. Some of these sections may or may not have been strictly within the park boundaries. In this general area most butterflies were encountered whilst visiting flowers. Access to adults was far easier here due to clearing or disturbance, and because of the widening water course which breaks the canopy and allows flight corridors and lower perch sites for the adults. Upstream from the car park the canopy obscures one's view of most adults, and only those which occasionally descend to feed at roadside *Lantana camara*, can be readily identified.

The main sampled habitat was lowland subtropical rainforest, but sampling was also conducted on the summit in December and April, and this added a number of cool temperate butterflies to the list. The summit habitat consists of windswept scrubland, but includes butterfly visitors (eg. *Graphium sarpedon*, *Erysichton lineata*, *Delias nigrina* etc.), which ascend from rainforest beneath. Adults were more readily recognised or netted on the peak because of the stunted vegetation. Since many species can be identified on the wing, very few adults were netted within the park boundaries. Some of the smaller skippers and lycaenids needed closer examination, but most were released after certain identification.

Seventy-one (71) species were recorded from the park. This number is a little lower than anticipated but still represents about 18% of the Australian butterfly fauna, and nearly 34% of the state fauna (NSW) (Dunn & Dunn, 1991). Summit sampling during other summer months would undoubtedly reveal several more species, and I similarly expect that the lowland rainforests harbour many more species than those listed. There are 216 butterflies known from the McPherson region (Dunn & Dunn 1991) and at least 100 of these could be expected within the park. At present 33% of the McPherson fauna is now recorded from this National Park.

Apart from this preliminary list there are no published butterfly checklists available for Mt Warning. Indeed, there is but the odd record scattered amongst the literature. Waterhouse (1934) refers to A.J. Marshall taking two species (*Hesperilla mastersi* and *H. idothea*) from the mountain (both of these are still present in the park). One or more of these early records is subsequently reiterated by others (eg's. Crosby, 1963, Common & Waterhouse, 1981). In addition to my own records, the report includes some observations and museum records in the Dunn & Dunn database.

The record of *Signeta tymbophora* is from Daniels (1976). This is a rare and localised skipper, which in the National project on threatened butterflies was classified as 'Insufficiently known' (Dunn *et al.*, 1994, see also Dexter *et al.*, 1993). Its presence in the park is of significance. Other threatened species now confirmed in the park include *Telicota anisodesma* (RARE), *Euschemon rafflesia* (RARE), *Protographium leosthenes* (VULNERABLE) and *Troides priamus* (often as *Ornithoptera richmondia*) (RARE) (see Dexter *et al.*, 1992 for discussion of status in NSW). Of these all except the birdwing (*T. priamus*) are scarce in the park. The birdwing, however, is abundant during the warmer months and a dominant member of the park butterfly fauna. Mt Warning clearly represents a strong hold for this species.

As for the other species, it remains difficult to assess their relative abundances as many were represented by infrequent observations. Dominant species are those marked, and the remainder is seasonally present in varying abundances. The population of *Hypochrysops byzos*, which breeds near the summit, is unusual in that the central yellow patch on the upperside of the hindwing is obscured. It represents a local form of the species.

List of butterflies recorded:

(R) Observed to be rare in the park

(A) Very abundant/dominating species in park

All unmarked species are probably reasonably common in the park but the status of all marked and unmarked species is relative to the seasonal conditions prevailing at the time of sampling.

(S) Summit occurrence (above 1000m)

(L) Lowland occurrence

(*) Not recorded by me but allegedly within or very near the park boundary according to specimen label data.

The 15 species marked '*1' are from records of a Sydney butterfly collector, [the late] F. Sattler, and are vaguely labelled 'Mt Warning southern side'. Many of these butterflies are woodland species and clearly did not originate from the car park area to the east of the summit where I conducted most of my observations. It is likely they are from some distance beyond the park boundary and perhaps are not typical of the National Park fauna. Their inclusion in the park list should be treated as tentative or unconfirmed at present. In particular, the record of *Anthene seltuttus* [normally a tropical species associated with green tree ants which don't occur in the park] is remarkable to say the least. As I have not examined any of the records marked '*1' I cannot vouch for their identifications.

L	<i>Hasora discolor</i>
L	<i>Hasora khoda</i>
*1	<i>Badamia exclamationis</i>
R,L	<i>Euschemon rafflesia</i>
*1	<i>Cheatoconeme beata</i>
LS	<i>Netrocoryne repanda</i>
L	<i>Trapezites symmomus</i>

Calodema Volume 6 (2006)

*1	<i>T. maheta</i>
*1	<i>T. phigaloides</i>
*1	<i>T. phigalia</i>
*1	<i>T. luteus</i>
S	<i>Signeta flammeata</i>
*L	<i>S. tymbophora</i>
*1	<i>Toxidia peron</i>
S	<i>T. andersoni</i>
L	<i>T. doubledayi</i>
*1	<i>Hesperilla malindeva</i>
S	<i>H. idothea</i>
S	<i>H. mastersi</i>
*1	<i>Taractrocera papyria</i>
L	<i>Suniana sunias</i>
RL	<i>Telicota anisodesma</i>
AL	<i>Cephrenes augiades</i>
RL	<i>Protographium leosthenes</i>
LS	<i>Graphium macleayanum</i>
LS	<i>G. sarpedon</i>
L	<i>G. eurypylus</i>
L	<i>Papilio aegeus</i>
*1	<i>P. fuscus</i>
*1	<i>Cressida cressida</i>
AL	<i>Troides priamus</i>
L	<i>Catopsilia pomona</i>
L	<i>Eurema hecabe</i>
*	<i>Elodina parthia</i>
ALS	<i>E. angulipennis</i>
S	<i>Delias aganippe</i>
ALS	<i>D. nigrina</i>
L	<i>D. nysa</i>
S	<i>Anaphaeis java</i>
L	<i>Appias paulina</i>
*L	<i>Pieris rapae</i>
L	<i>Danaus plexippus</i>
L	<i>Tirumala hamata</i>
L	<i>Euploea core</i>
L	<i>Melanitis leda</i>
AL	<i>Hypocysta metirus</i>
*1	<i>Heteronympha merope</i>
L	<i>H. mirifica</i>
*	<i>H. banksii</i>
S	<i>Polyura sempronius</i>
L	<i>Phaedyra shepherdii</i>
L	<i>Mynes geoffroyi</i>
L	<i>Hypolimnas bolina</i>
LS	<i>Vanessa kershawi</i>
LS	<i>V. itea</i>
*1	<i>Junonia villida</i>
*S	<i>Acrodipsas cuprea</i>
S	<i>Hypochrysops delicia</i>
*S	<i>H. byzos</i>
L	<i>Philiris innotata</i>

- *1 *Anthene seltuttus*
- L *Candalides absimilis*
- *S *C. consimilis*
- *1 *C. acastus*
- *S *Nacaduba biocellata*
- L *Prosotas dubiosa*
- LS *P. felderi*
- L *Catopyrops florinda*
- LS *Erysichton lineata*
- *S *Theclinesthes serpentata*
- L *Zizina labradus*

Total of 71 species

Report 5 references

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Addendum (2006): Mt Warning NP

Newland (1999) cited this fifth survey as an unpublished report to NSW NPWS in a paper documenting his sequential survey work in the park. Building on this 1995 report, Newland increased the species count to 96; the 25 additional species are indicated in his paper. Other than this, little else has been published on butterflies in this park in recent years: Eastwood (1997) reported his discovery of *Hypochrysops byzos* on Mt Warning in January 1988, and later illustrated a female in colour. Eastwood and Bean (2002) corrected the larval host identification to *Rulingia* (Sterculiaceae); Newland (1999: 88) also extended the flight period for this localised butterfly from "December to March", and reported adults settling on *Pomaderris* (Rhamnaceae).

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